

**NASDA**  
**Specialty Crop Task Force**

*The Changing Shape of America*

**A.G. Kawamura**

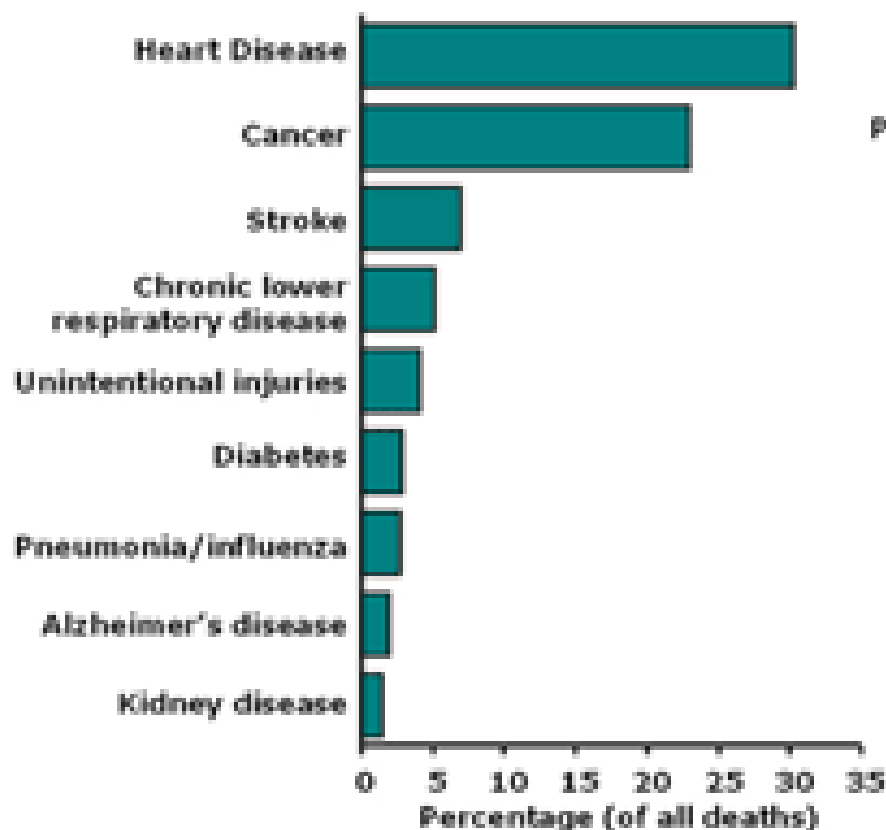
**February 18, 2004**

**Dr. Richard Jackson**  
**CA State Public Health Officer**

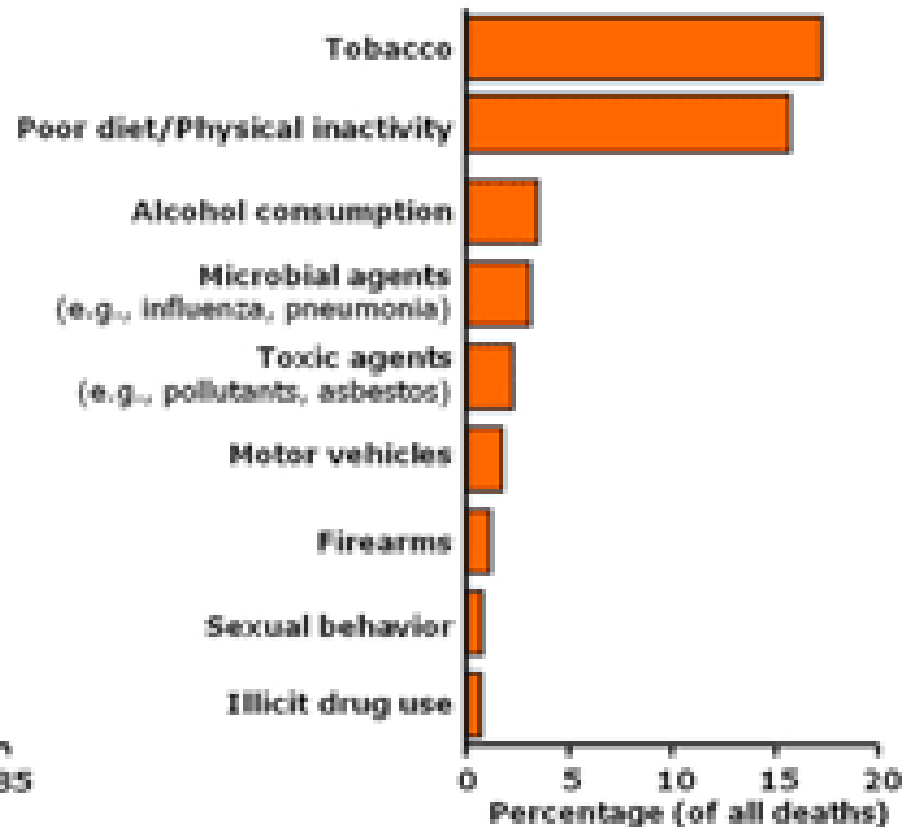
# Chronic Diseases in the 21<sup>st</sup> Century

- Mental Disorders: Depression, Anxiety, Developmental, Substance Abuse
- Overweight: Diabetes II, Heart Disease
- Musculoskeletal: Arthritis, Osteoporosis
- Respiratory Disease: Asthma, COPD
- Macro-environment: Climate, Conflict

**Leading Causes of Death\***  
**United States, 2000**



**Actual Causes of Death†**  
**United States, 2000**



\* Miniffo AM, Arias E, Kochanek KD, Murphy SL, Smith BL. Deaths: final data for 2000. National Vital Statistics Reports 2002; 50(15):1-120.

† Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. JAMA. 2004;291(10):1238-1244.

**Death Certificate Vs Actual Cause of Death US 2000**

I Believe:

- The Greatest Threat to Americans' Health is
- Our Mismanagement of risk assessment

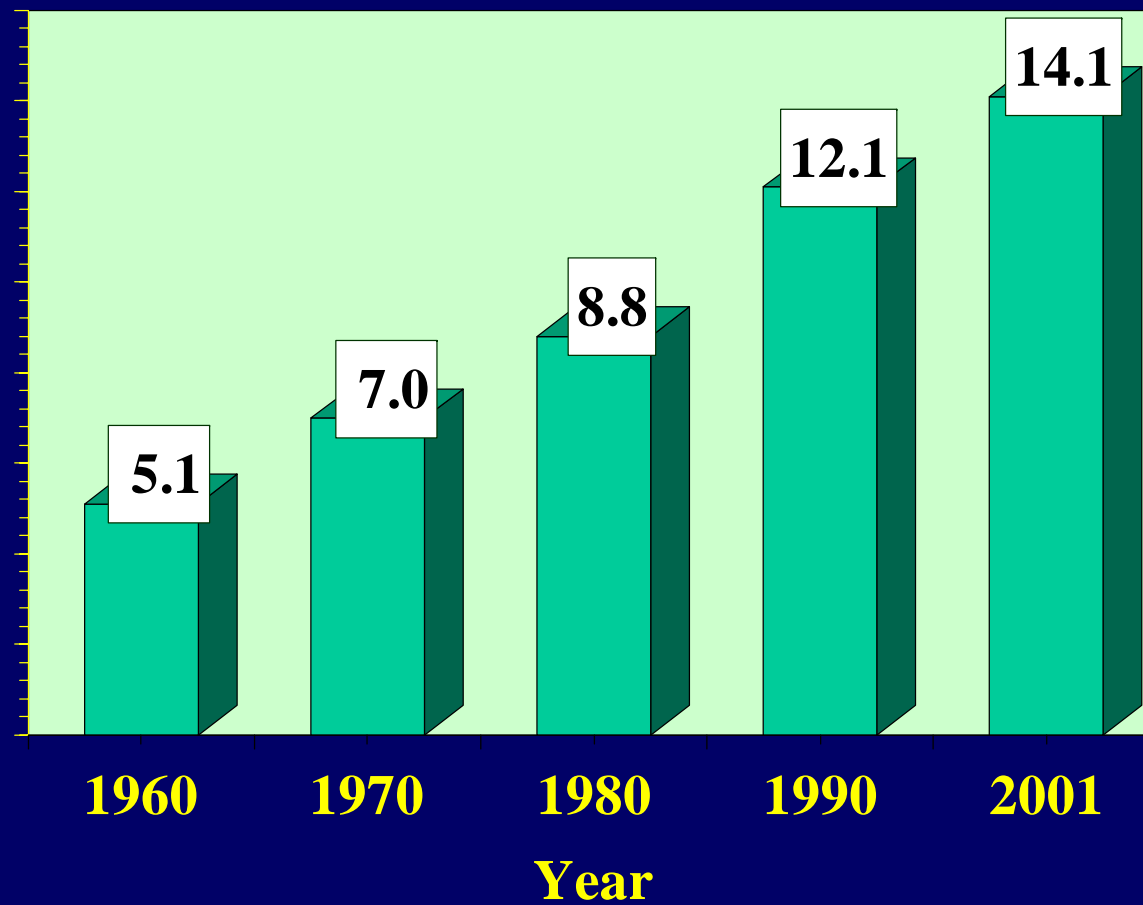
# We SuperSize Our Children

“Remember  
when we  
used to  
have to  
fatten the  
kids up  
first?”



*“Remember when we used to have to fatten the kids up first?”*

# US Health Care Expenditures as Percent of GDP 1960 to Present



**\$1.4  
Trillion  
out of  
\$10.08  
Trillion  
GDP in  
2001**

# Death rates for all causes

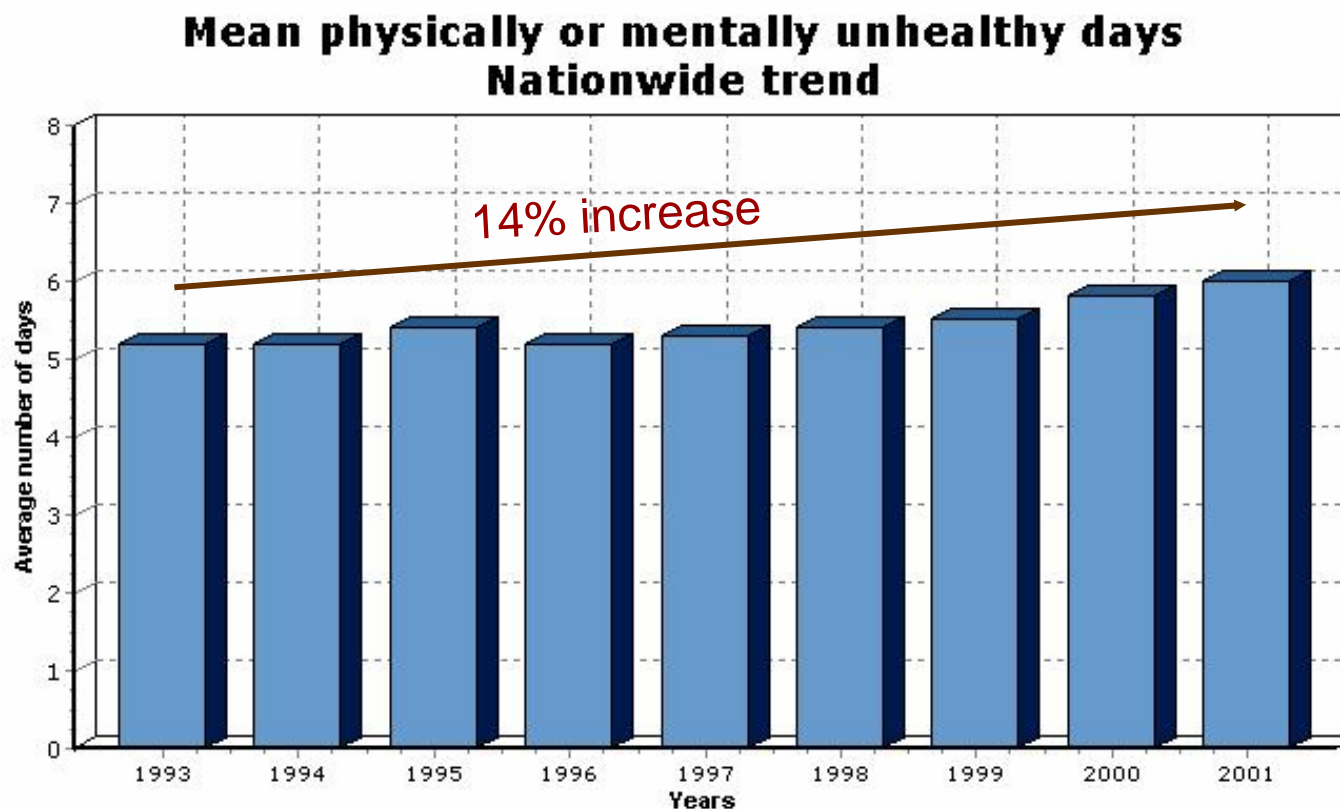
Deaths per 100,000 population

	1-14	15-24	25-44	45-64	>65
U.S.	24	81	157	662	5203
Canada	18	58	103	497	4547
Japan	18	43	85	469	3653
Sweden	14	38	84	465	5327
U K	17	51	100	584	5640

Source: World Health Organization, [www3.who.int/whosis/mort/table1.cfm?path=whosis,mort,mort\\_table1&language=english](http://www3.who.int/whosis/mort/table1.cfm?path=whosis,mort,mort_table1&language=english)

# Average number of unhealthy days per month

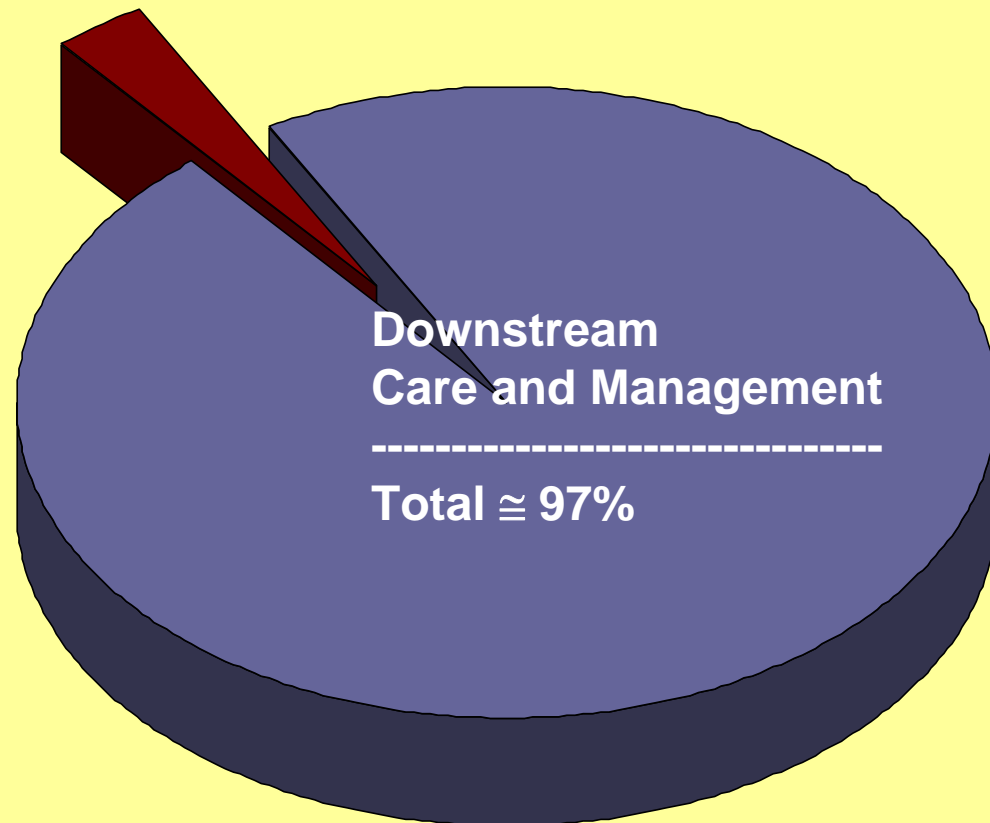
## Quality of Life Prevalence Data



Source: Centers for Disease Control and Prevention. Health-related quality of life: prevalence data. National Center for Chronic Disease Prevention and Health Promotion, 2003. Accessed March 21 at <<http://apps.nccd.cdc.gov/HRQOL/>>.

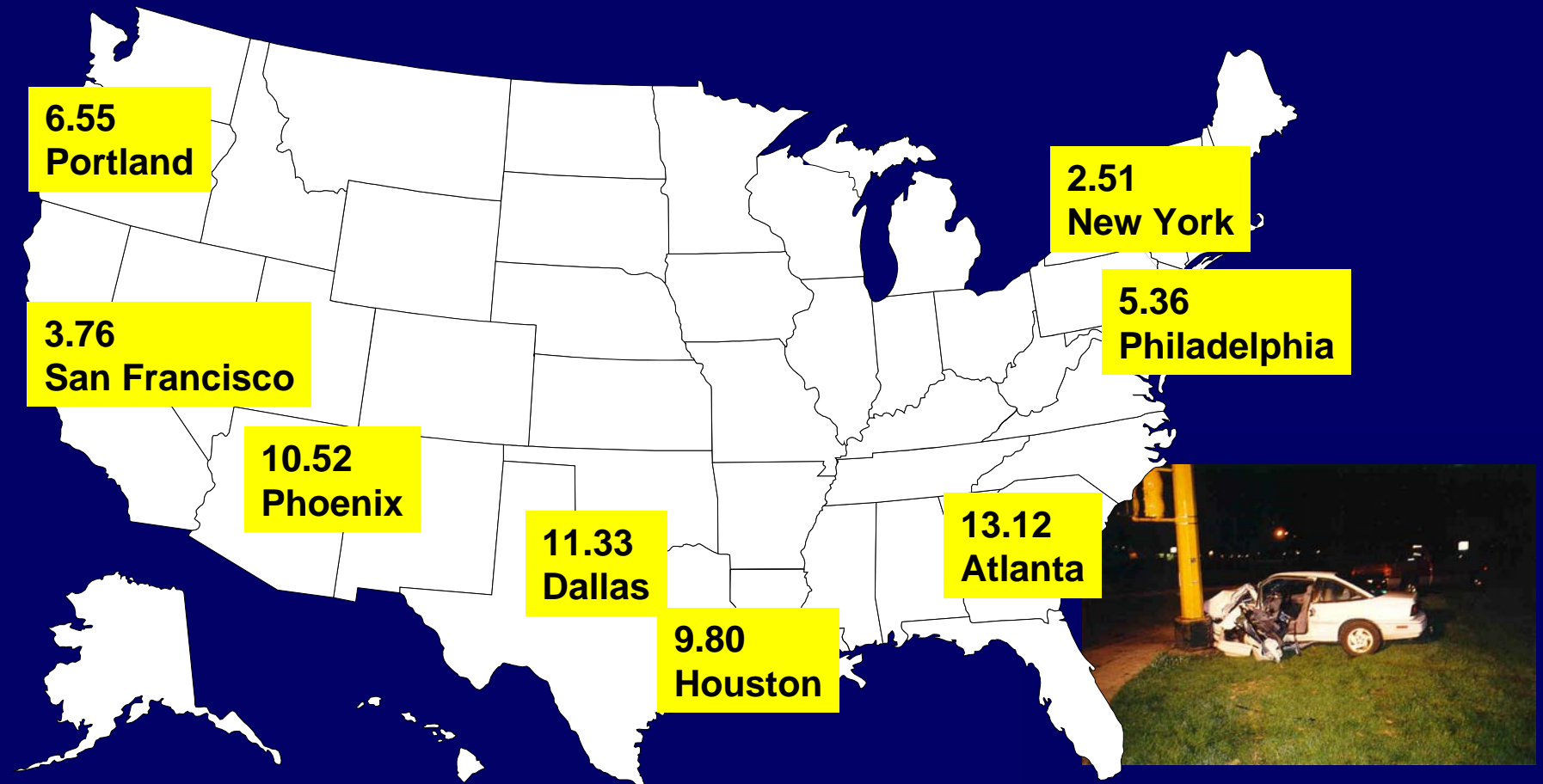
# Underinvestment in Public Health, Protection and Prevention

Upstream  
Prevention --  
Total < 3%



# Automobile fatality rates by city, 1998

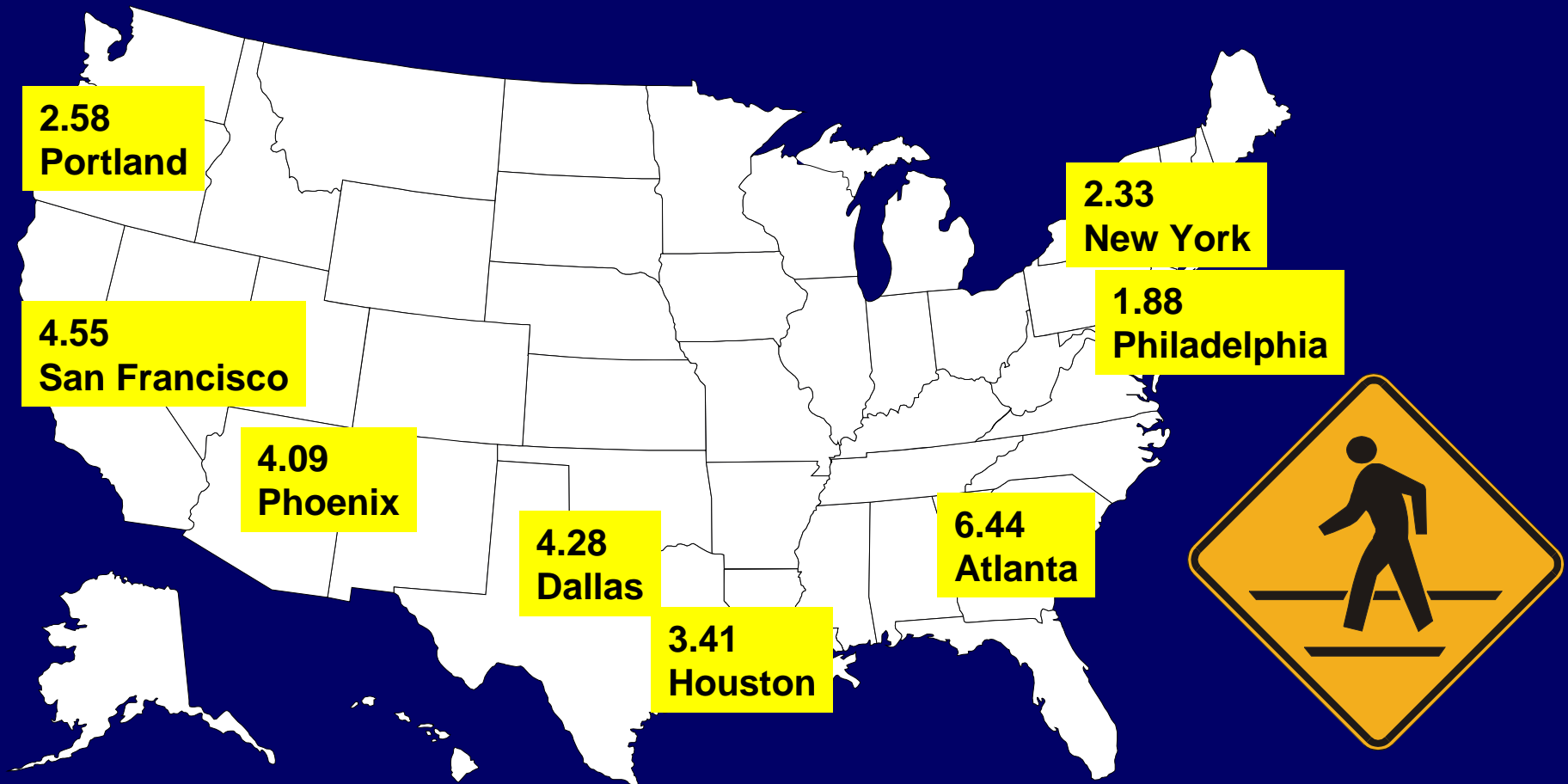
(excluding pedestrian fatalities; deaths/100,000/year)



Source: NHTSA

# Pedestrian fatality rates by city, 1998

(deaths/100,000/year)



Source: NHTSA

# These Changes are Affecting Every Stage of American Life

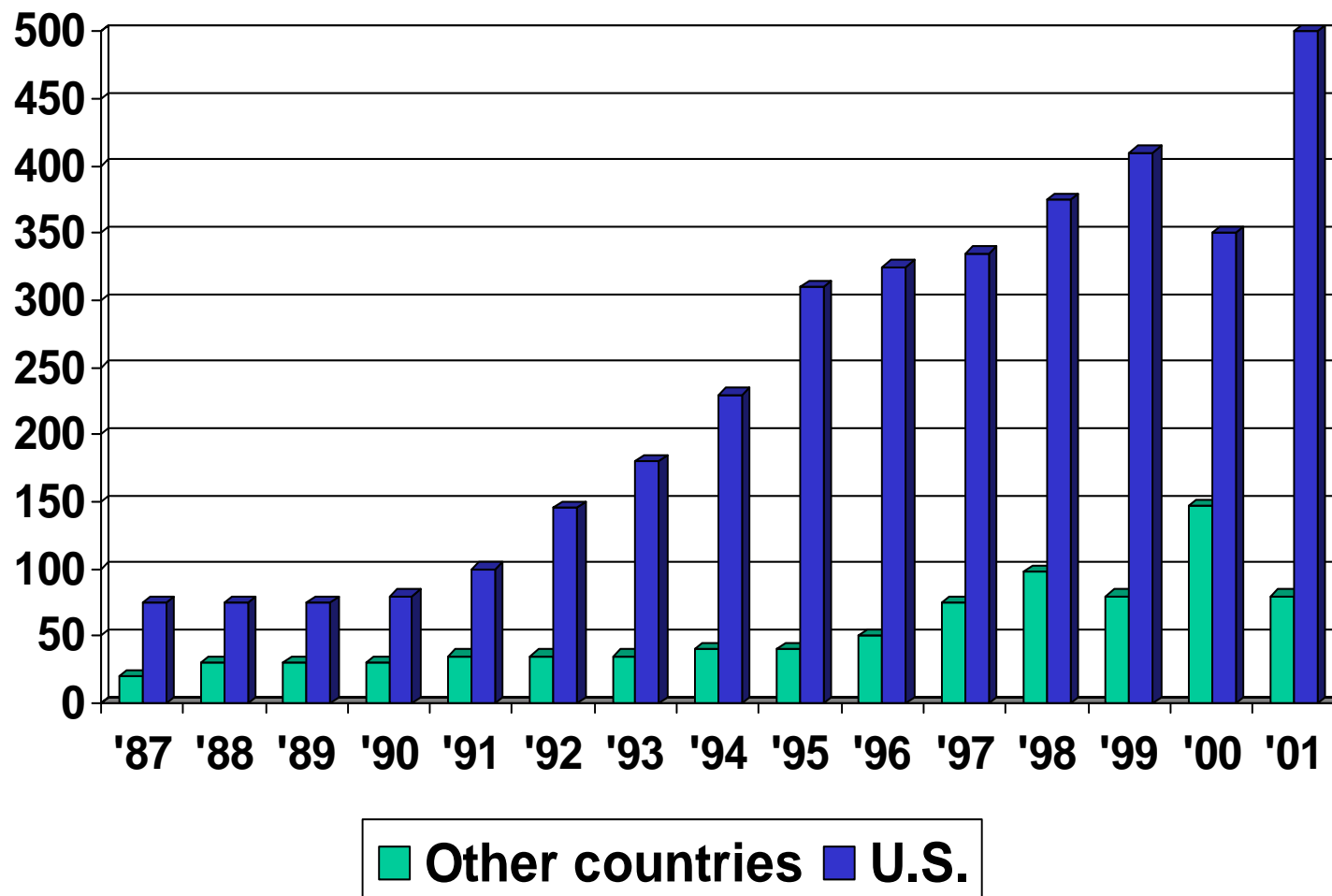
- Infant and Toddler
- Pre-School
- School Age including Preteen
- Adolescent
- Young adult including young Parents
- Midlife
- Elderly
- Very Elderly

# Children's Contact with Nature

- School age children with ADHD who had higher contact with nature showed better concentration, task completion, and following of directions.

*Coping with ADD: The Surprising Connection to Green Play Settings”  
Environment and Behavior, 33 (1), 54-77 AF Taylor, FE Kuo, WC  
Sullivan, 2001*

## Methylphenidate (Ritalin) Consumption, United States and Elsewhere: 1987 - 2001

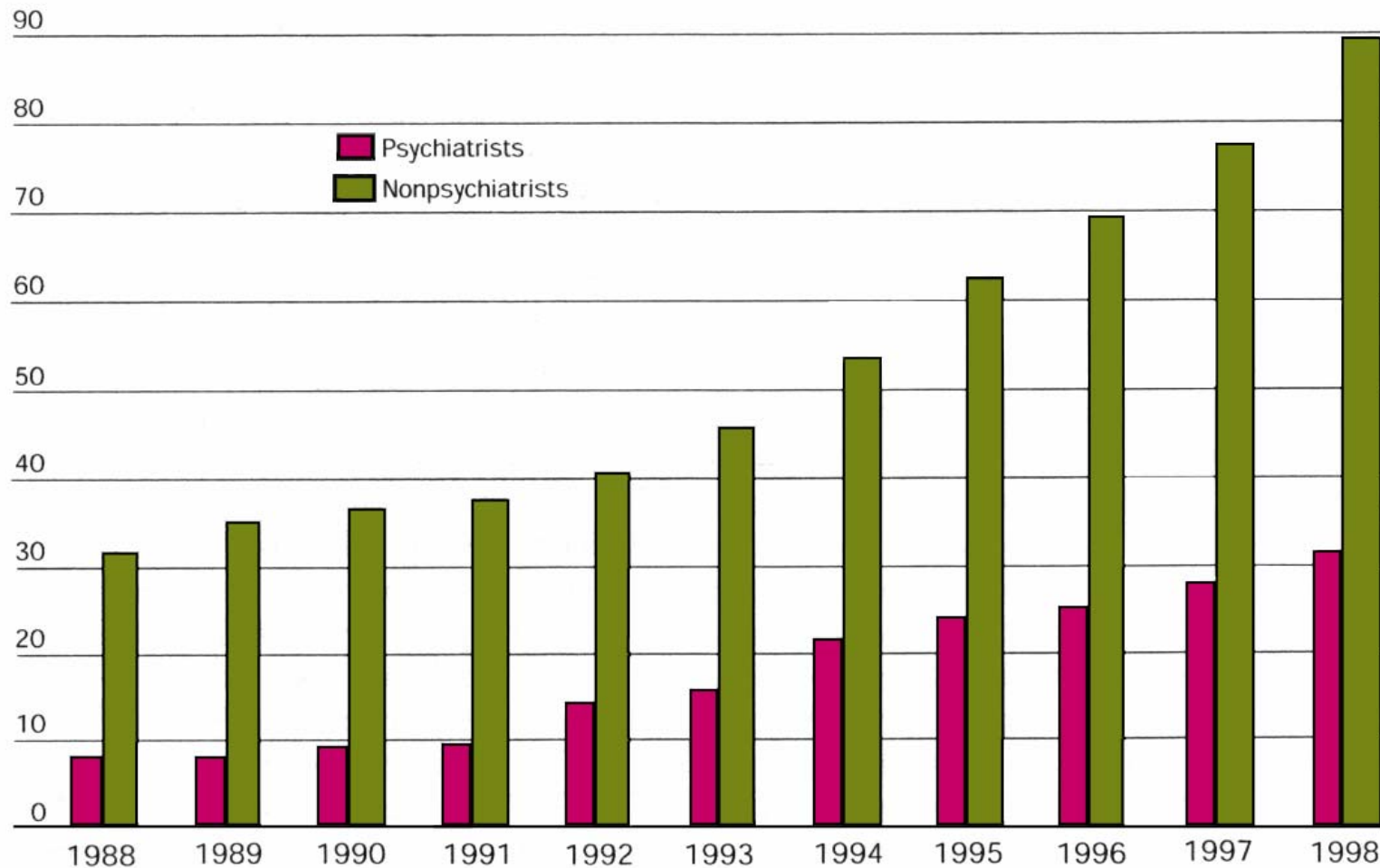


Source: Science, Vol. 289, 4 August 2000, p. 721 and International Narcotics Control Board, 2002

# Antidepressant Rx in US

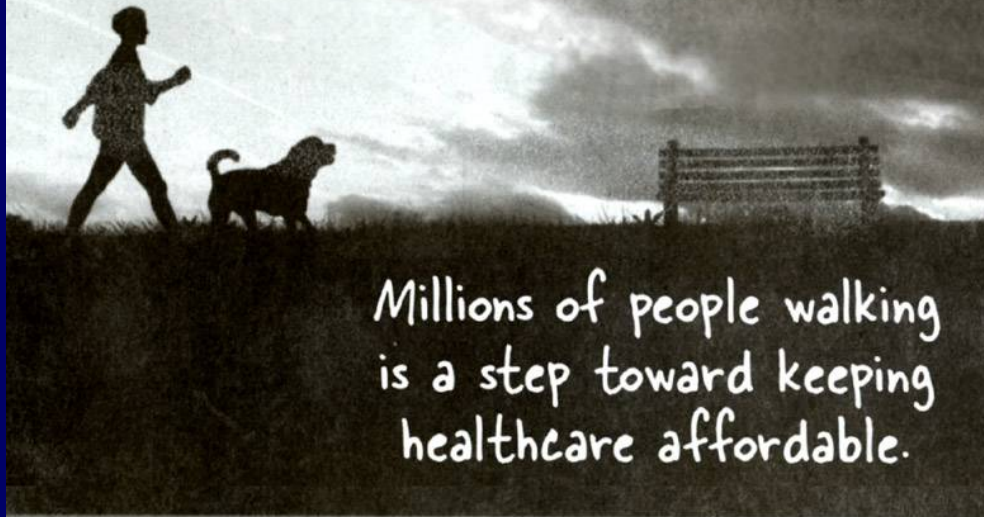
## Antidepressant Prescriptions By Physician Specialty, 1988-1998

Millions of prescriptions



**SOURCE:** IMS Health, Inc.  
**HEALTH AFFAIRS - Volume 19, Number 4**

One person walking  
is exercise.



Millions of people walking  
is a step toward keeping  
healthcare affordable.

The illness and chronic disease resulting from inactive lifestyles cost as much as \$77 billion a year to treat. That's why Blue Cross and Blue Shield Plans across the nation are launching **WalkingWorks<sup>SM</sup>**, an unprecedented effort to work with employers to help Americans add physical activity to their daily routines. It's one of the many ways we're doing our part to control rising healthcare costs. For more information, visit our web site at [www.bcbs.com](http://www.bcbs.com).

**Healthcare. Affordable. Now.**



**BlueCross BlueShield  
Association**

An Association of Independent  
Blue Cross and Blue Shield Plans

## Exercise

From the  
OP-ED Page  
of the New  
York Times

## \* CANINE CONSTITUTIONAL



Jim Russell / Impact

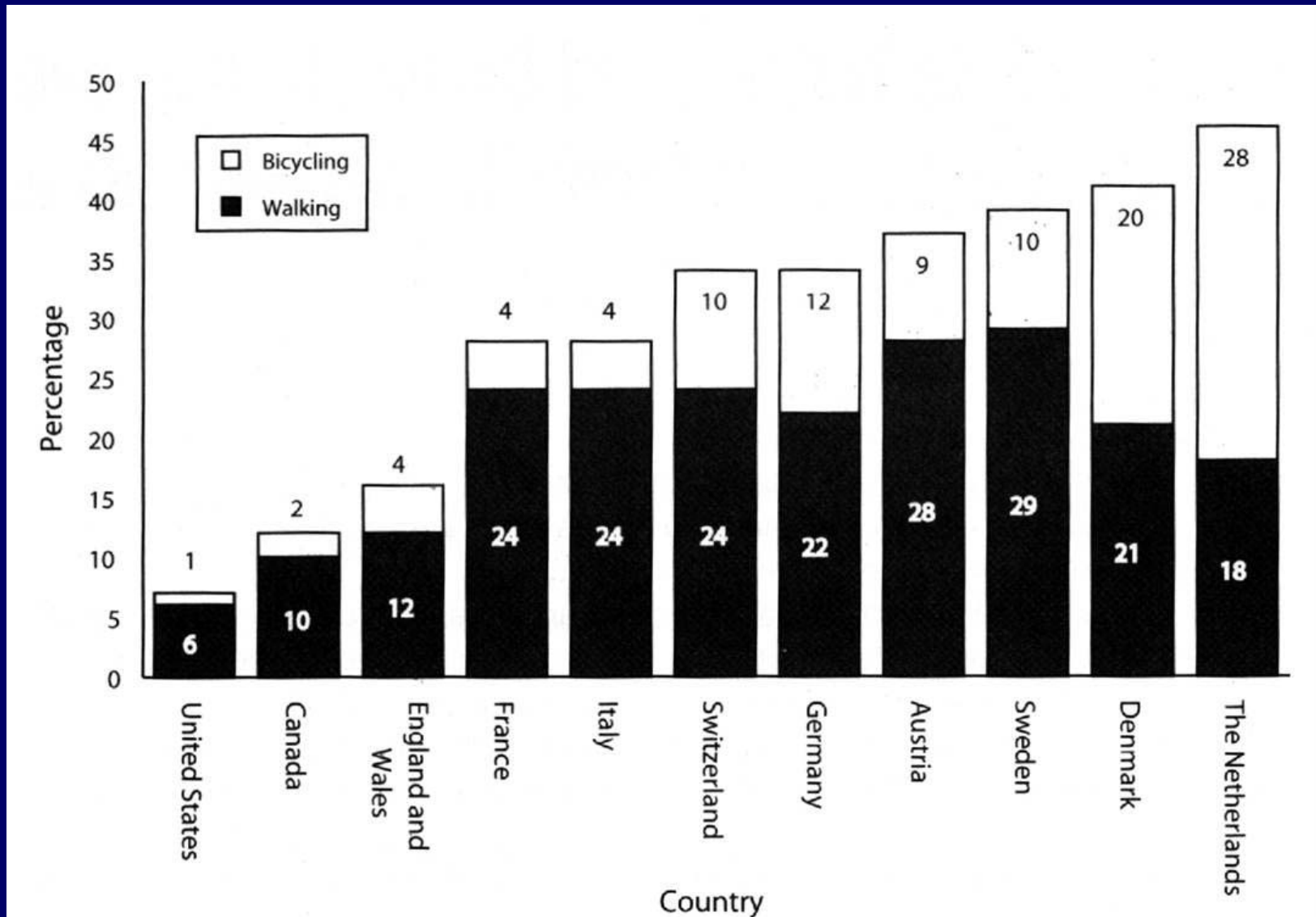
A brisk walk in the park keeps Marcy II in shape between dog shows. His owner, Columbus resident Cathy Stumbo, got up early

to give her 3-year-old Doberman his regular workout. They typically jog 15 miles in Berliner Park.



San Diego, California

# Percentage of Trips in Urban Areas Made by Walking and Bicycling: North America and Europe 1995



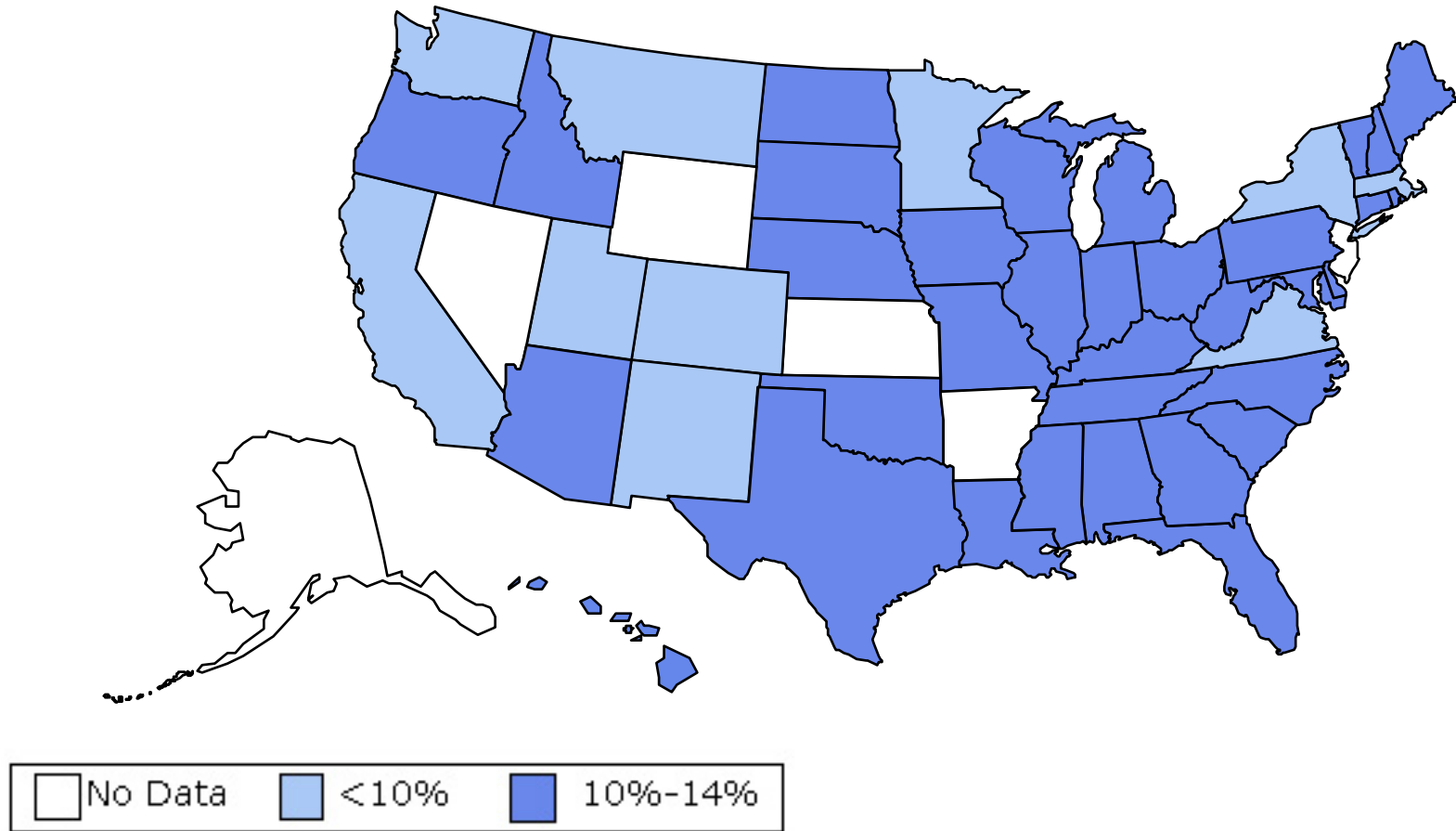
# Super-Sizing of Americans



# Obesity Trends\* Among U.S. Adults

## BRFSS, 1990

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5'4" woman)

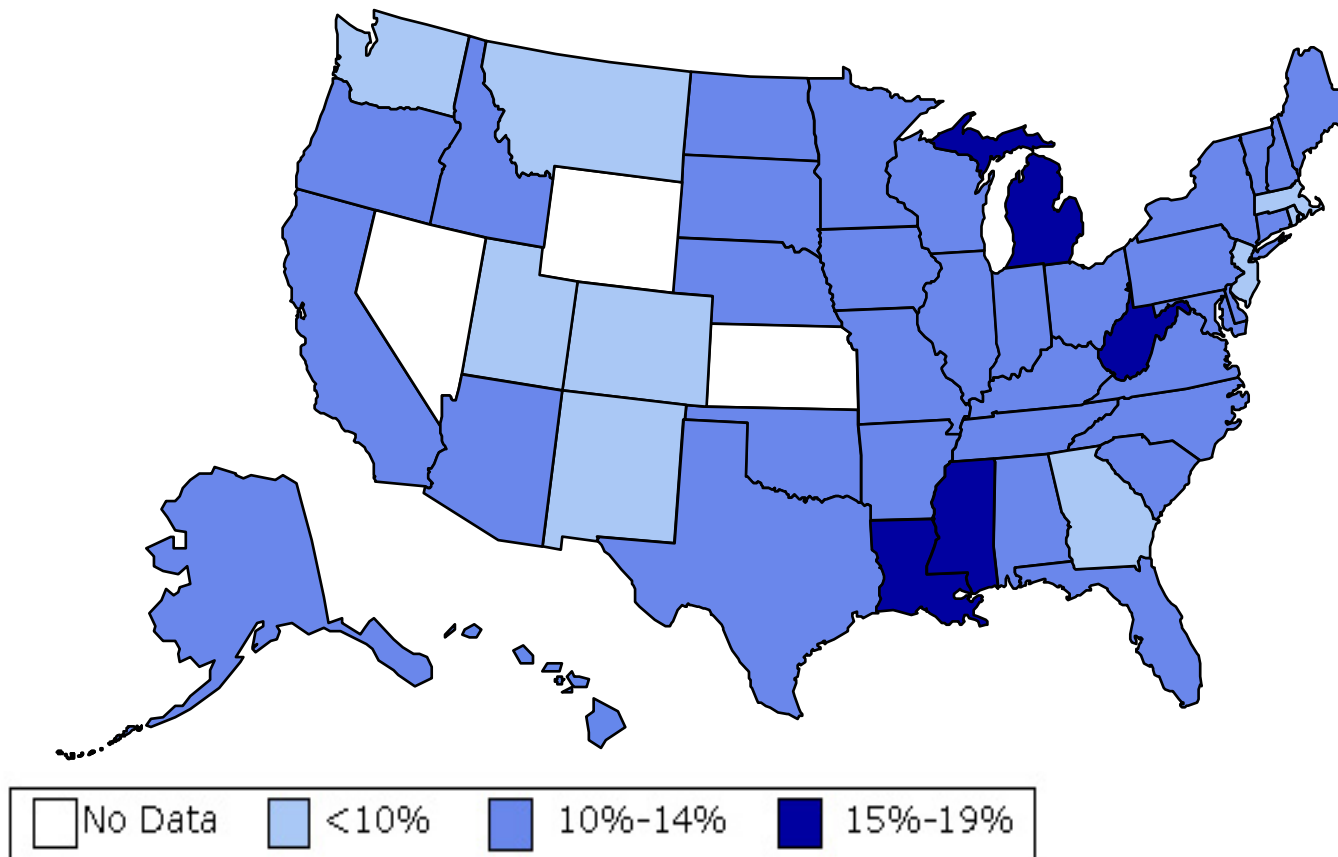


Source: Mokdad A H, et al. *J Am Med Assoc* 1999;282:16, 2001;286:10.

# Obesity Trends\* Among U.S. Adults

## BRFSS, 1991

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5'4" woman)

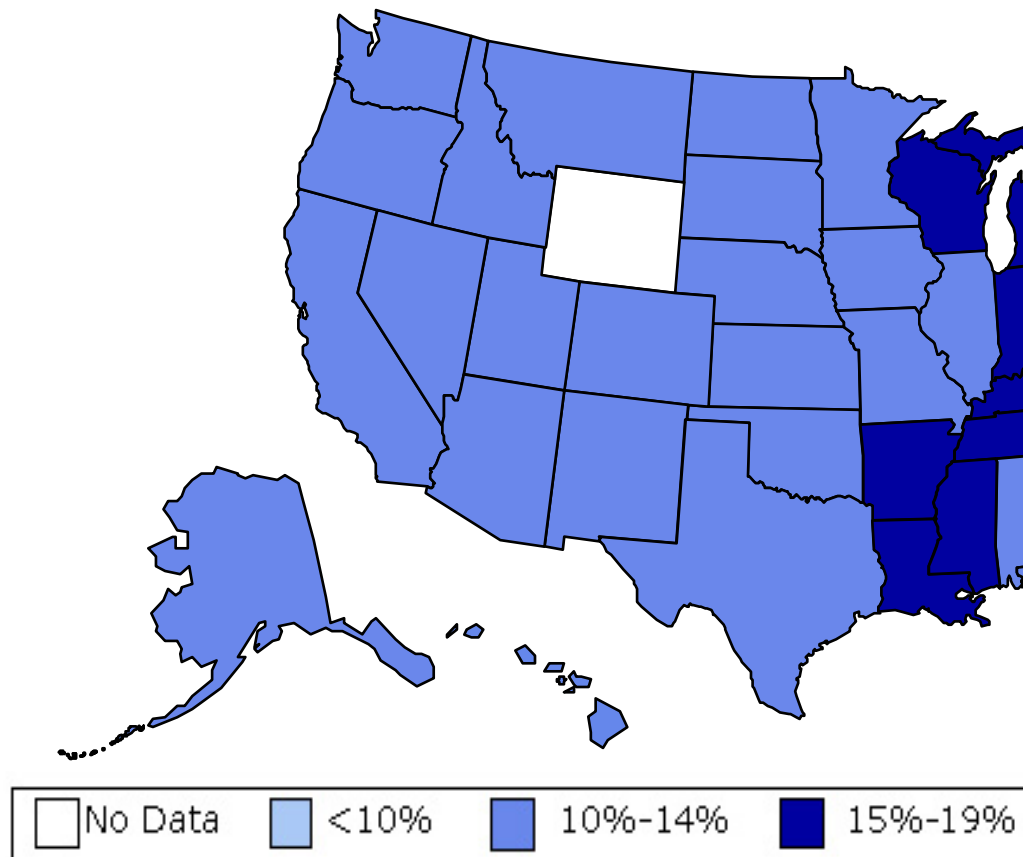


Source: Mokdad A H, et al. *J Am Med Assoc* 1999;282: 16, 2001;286: 10.

# Obesity Trends\* Among U.S. Adults

## BRFSS, 1993

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5'4" woman)

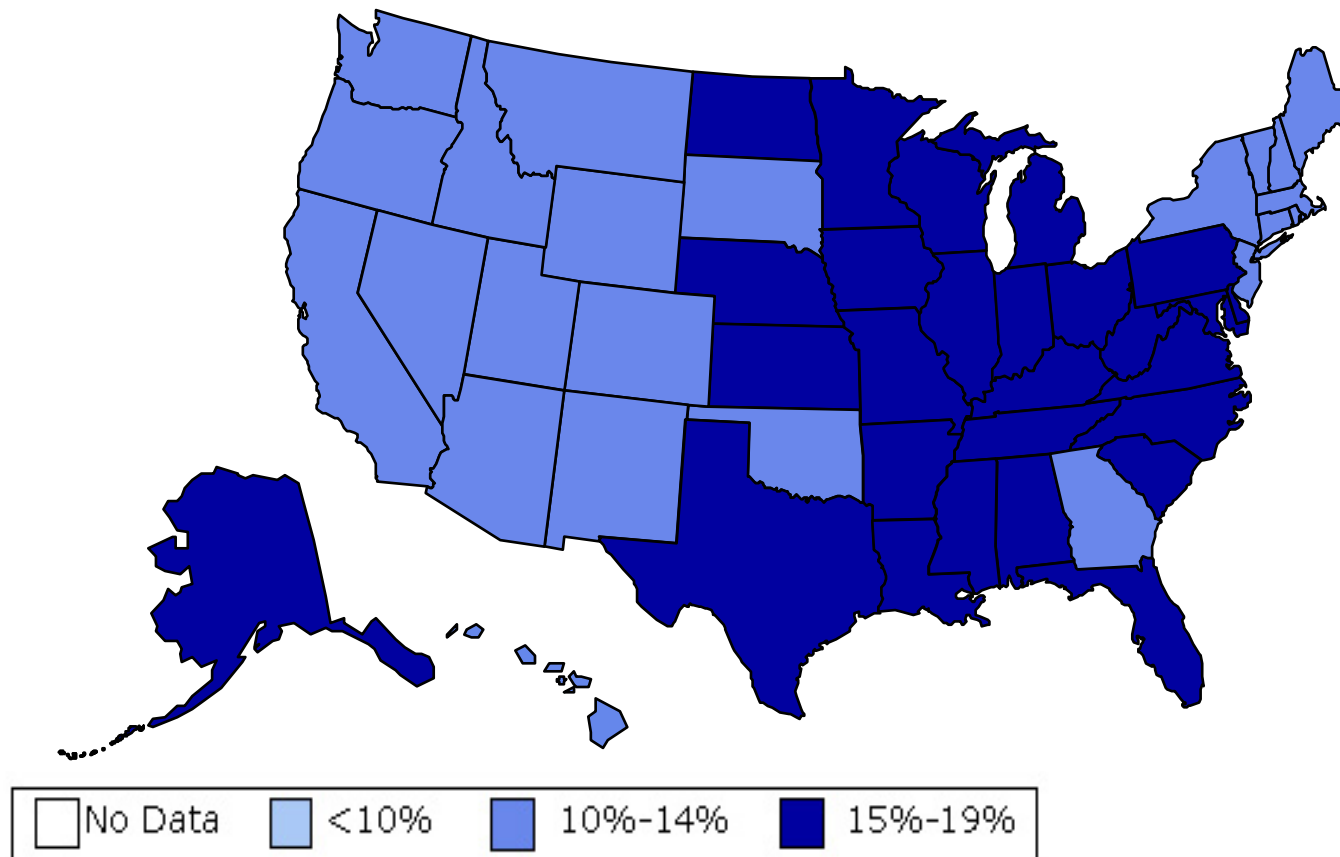


Source: Mokdad A H, et al. *J Am Med Assoc* 1999;282: 16, 2001;286: 10.

# Obesity Trends\* Among U.S. Adults

## BRFSS, 1995

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5'4" woman)

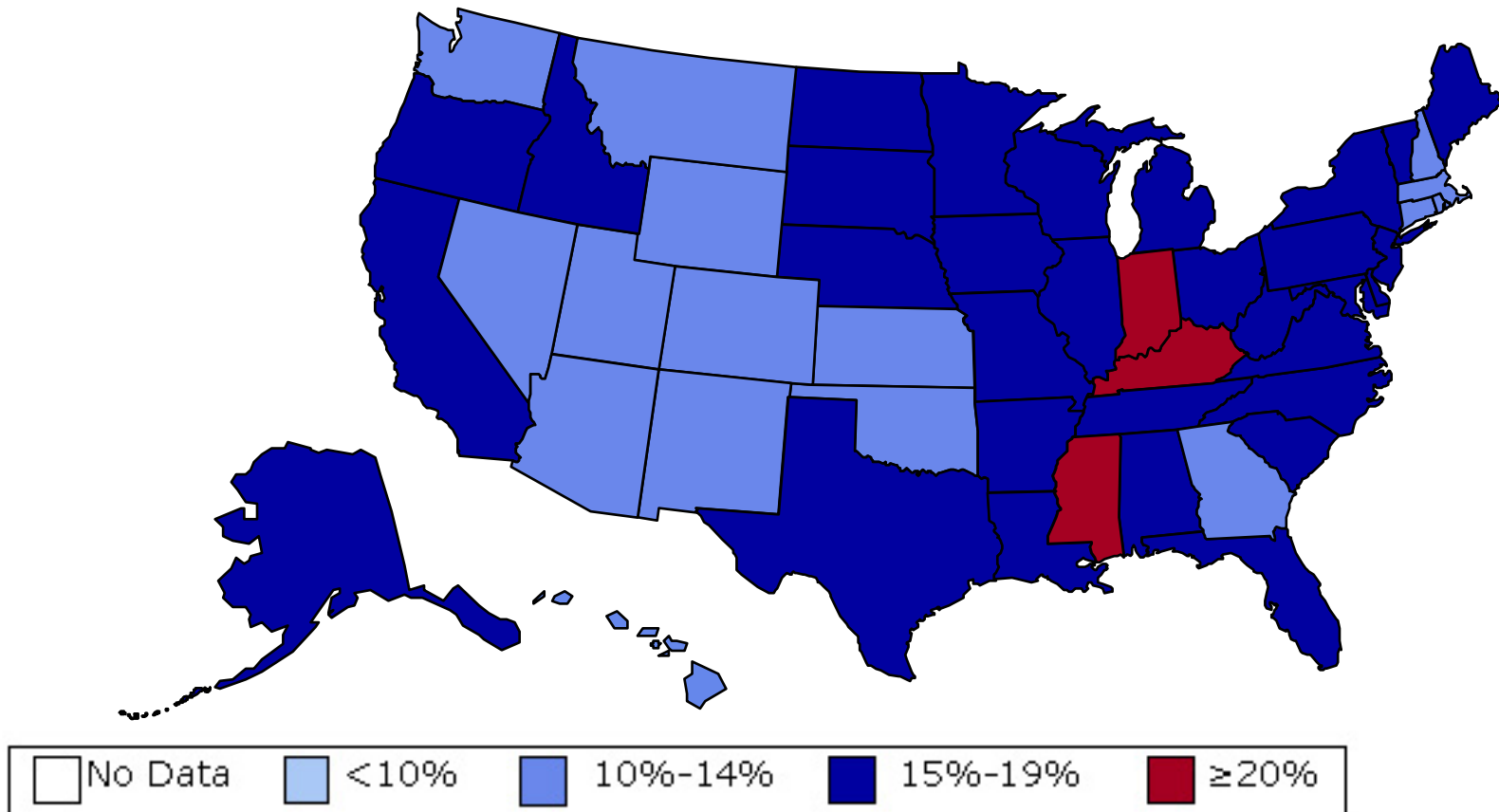


Source: Mokdad A H, et al. *J Am Med Assoc* 1999;282: 16, 2001;286: 10.

# Obesity Trends\* Among U.S. Adults

## BRFSS, 1997

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5'4" woman)

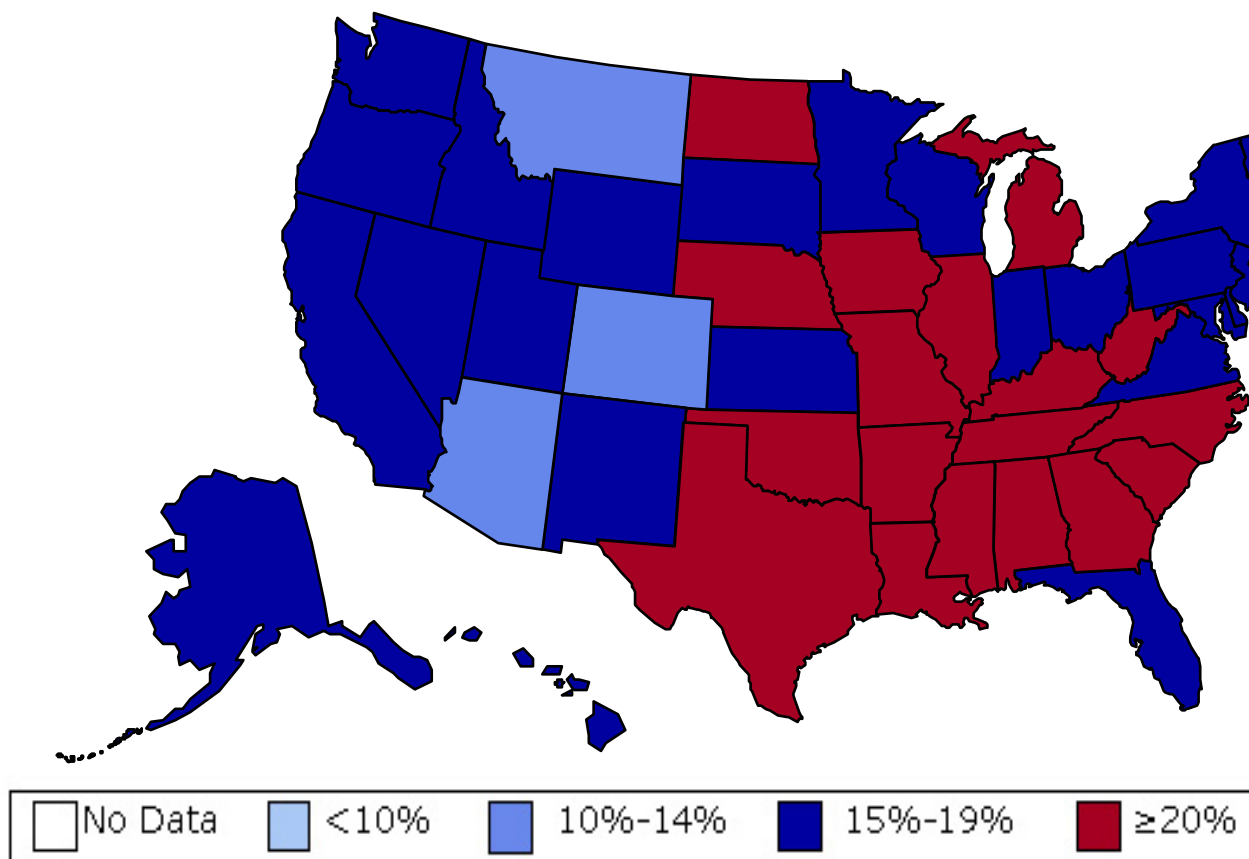


Source: Mokdad A H, et al. *J Am Med Assoc* 1999;282:16, 2001;286:10.

# Obesity Trends\* Among U.S. Adults

## BRFSS, 1999

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5'4" woman)

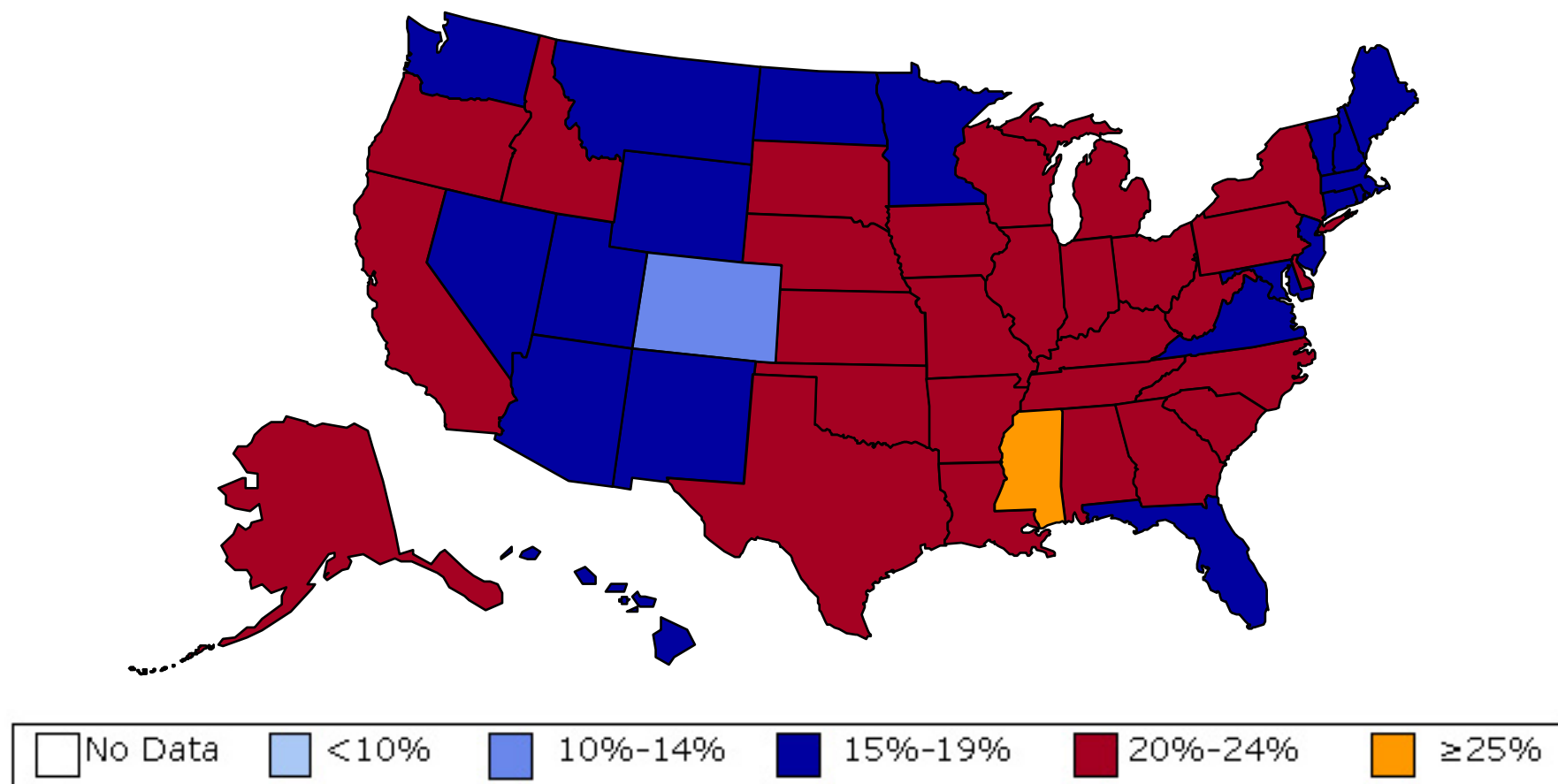


Source: Mokdad A H, et al. *J Am Med Assoc* 1999;282: 16, 2001;286: 10.

# Obesity Trends\* Among U.S. Adults

## BRFSS, 2001

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5'4" woman)



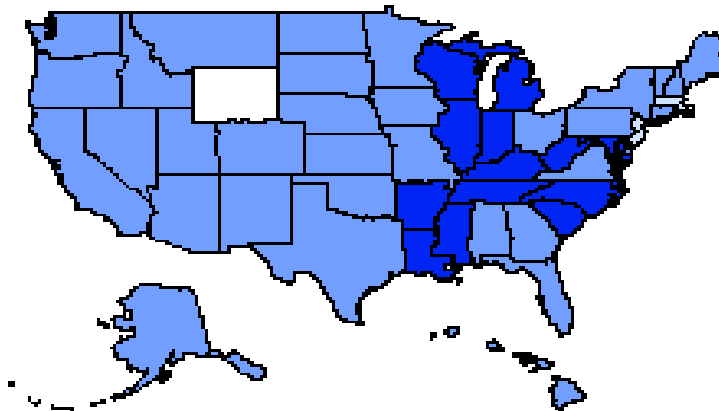
Source: Mokdad A H, et al. *J Am Med Assoc* 1999;282:16, 2001;286:10.

## Obesity Trends\* Among U.S. Adults

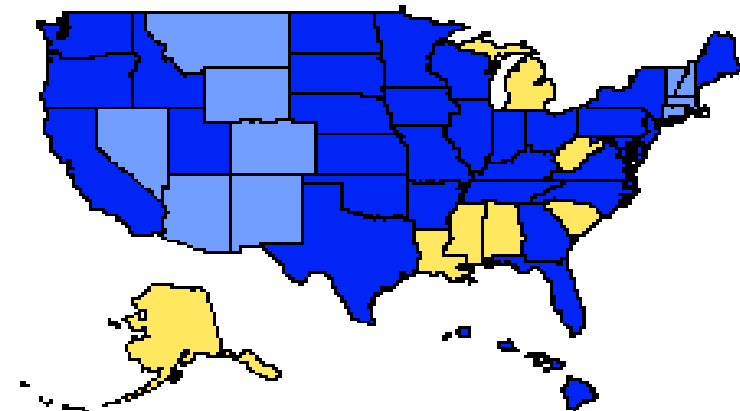
1993, 1998, 2003

(\*BMI  $\geq 30$ , or ~30 lbs overweight for 5'4" woman)

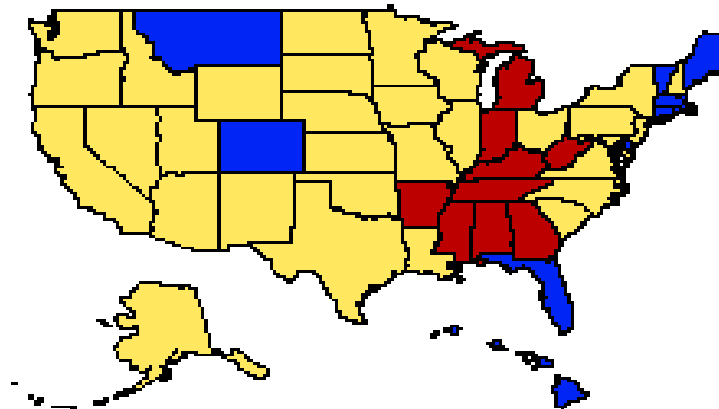
1993



1998



2003

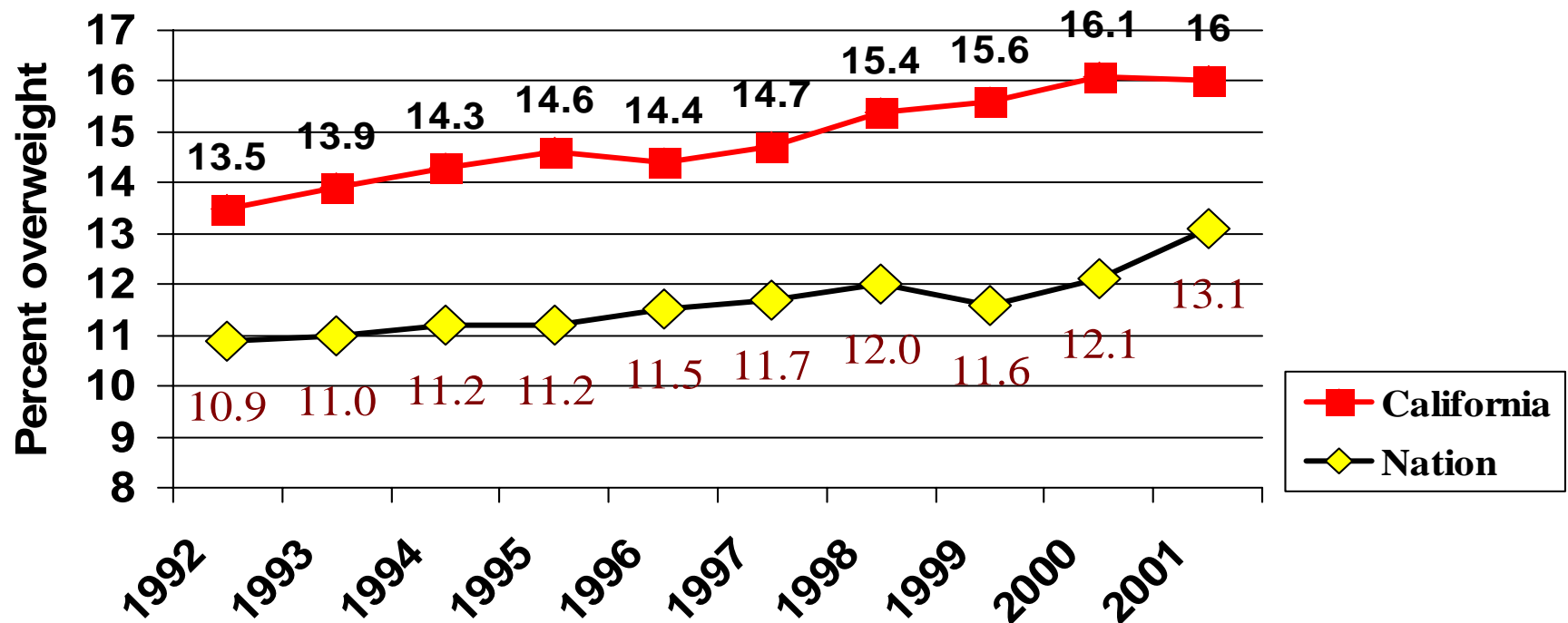


Legend:   
 No Data   
 <10%   
 0%–14%   
 15%–19%   
 20%–24%   
  $\geq 25\%$

Source: Centers for Disease Control Behavioral Risk Factor Surveillance System, Mokdad A.H. et al. *Journal of the American Medical Association* 1999;282:16. Mokdad A. H. et al. *JAMA* 2001;286:10 and Mokdad A.H. et al *JAMA* 2003;289:1.

# Prevalence of Overweight\* for Low-income Children Aged < 5 Years

19% Increase, 1992 - 2001



•Overweight = BMI > 95th percentile. Overweight is comparable to obesity in adults.

Source: California Dept. of Health Services, Children's Medical Services Branch, California Pediatric Nutrition Surveillance System

# US Obesity Woes Put a Strain on Hospitals



HEALTH

May 1, 2002

FROM THE ARCHIVES: May 1, 2002

## U.S.'s Obesity Woes Put a Strain On Hospitals in Unexpected Ways

By RHONDA L. RUNDLE  
Staff Reporter of THE WALL STREET JOURNAL

When an extremely heavy man spent several weeks at a Kaiser Permanente hospital in Fresno, Calif., two years ago, employees suffered a string of injuries providing routine care for the nearly 500-pound patient.

"We can document five injuries, but there may have been as many as 11 from anecdotal evidence," says Barbara Smisko, director of Western environmental health and safety services at Kaiser, the Oakland, Calif., health-maintenance organization. "It's a dramatic story, but it characterizes the kinds of things that happen to patients and staff every day."

The fact that more Americans are obese is putting a new strain on the nation's health-care system in

### OBESITY IN AMERICA

- Health-Care Costs for Obesity Top Those Related to Smoking<sup>1</sup> 03/12/02
- Obesity May Soon Kill More Americans Than Cigarettes, Surgeon General Says<sup>2</sup> 12/13/01

### Adjusting for Special Needs

A sampling of hospital products for obese patients:

Product/Company	Features	List Price
Bariatric wheelchairs Gendron	Up to 32-inch wide seat and weight capacity up to 850 lbs.; can be custom-built to any patient requirement	From \$680 to \$4,130
Burke Tri-Flex bed Burke	1,000 pound patient capacity; fully electric; clears 43-inch doorways	\$11,995
First Step Select Pressure Relief Mattress Overlay Kinetic Concepts	Adjustable air pressure in mattress; non-skid material; weight capacity up to 650 lbs.	Not available
Magnum II Bariatric Patient Care System Hill-Rom	A bed that functions as a chair and transport vehicle; holds up to 600 lbs.	\$26,000 and up
UltraTwin	Lifting	\$11,000

Advocacy Center in San Diego. "I get calls and e-mails on an average of five to 10 a month" from people who "sought treatment at a hospital and were told that it couldn't take care of them," he says.

Certainly, some hospitals view the growing popularity of weight-loss surgery as an opportunity -- both to build business and to improve obesity treatment in their communities. They are setting up bariatric wings for gastric surgery, which reduces the capacity of a patient's stomach. The American Society for Bariatric Surgery estimates there were 57,200 procedures last year, a 29% increase from 2000. "We don't see it slowing down anywhere," says Georgeann Mallory, executive director of the Gainesville, Fla., association. The average hospital cost for bariatric surgery is about \$20,000, she says.

More commonly, though, hospitals worry about the safety of nurses, physical therapists, and other

The New York Times

## Why We Eat (and Eat and Eat)

### Hungry? It Could Be Biochemical

Appetite is largely controlled by a complex system of molecules that evolved over millions of years. They travel between the body and the brain, and within the brain itself.

#### SIGNAL

##### NEUROPEPTIDE Y

A protein that acts as a transmitter in the nervous system and helps stimulate food intake as well as regulate metabolic rate and fat formation.

##### GHRELIN

A hormone made in the stomach and intestine. It is a powerful appetite stimulant.

##### PYY

Peptide YY3-36, or PYY, is made by cells in the intestine in response to food. It then circulates to the brain, where it switches off the urge to eat.

##### LEPTIN

Made by fat cells. When levels are normal, people eat just enough to maintain their weight. But leptin's absence signals the brain that the body lacks fat reserves. This can result in overeating.

### How PYY Helps Control Eating

1. The **arcuate nucleus** in the hypothalamus receives signals from the body and determines whether food is needed. Its two types of neurons are triggered by PYY.

Neurons that make you feel **full**.

Neurons that make you **hungry**.

PYY TURNS THEM **ON**

PYY TURNS THEM **OFF**

USE ENERGY

INCREASE FEEDING

2. The neurons send the appropriate signal (eat or don't eat) to the **paraventricular nucleus**. There, neurotransmitters for hunger or fullness are released.

3. The paraventricular nucleus sends signals giving priority either to feeding or to activities that use energy, including movement and growth.

4. Appetite is either triggered or suppressed.

The **PYY** gets into the brain through blood circulation.

Food in the intestine triggers **PYY** production.

Big Pharma is working with the best and Brightest to find the “magic bullet” for Obesity.

# Trying to Determine Why We Eat (and Eat and Eat)

Continued From First Science Page

fault. They're designed to get fat."

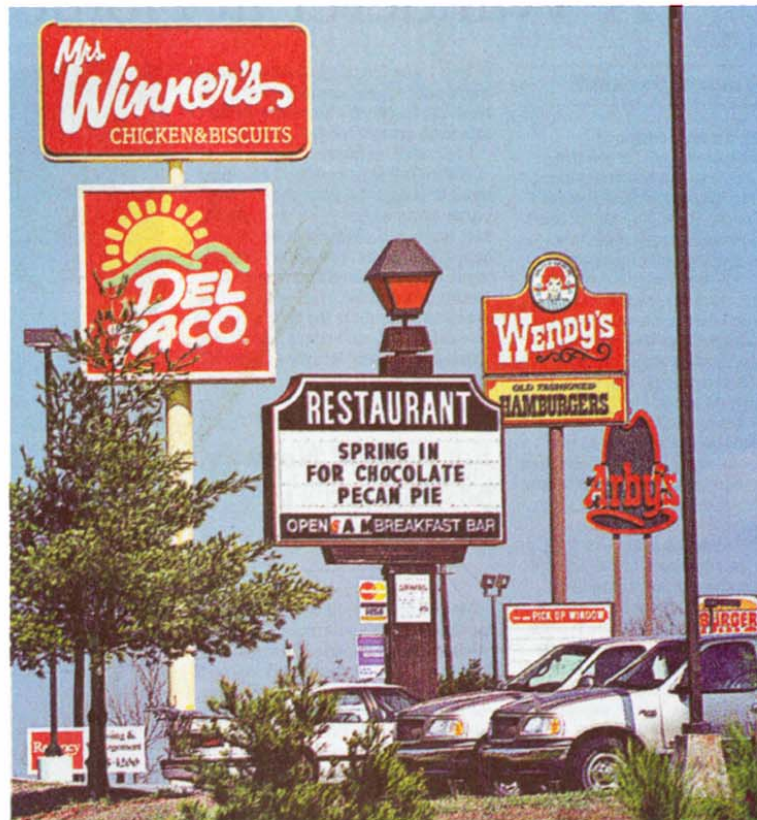
He and other scientists hope to decipher the signals that travel between the digestive system, the body's fat stores and the brain centers that control eating and metabolism, in a region called the hypothalamus. Then, researchers say, it may be possible to develop drugs that modify those signals to give people something dieters crave: the feeling of fullness.

Three prescription weight-loss drugs are already on the market, but researchers say they hope to develop more effective drugs with fewer side effects.

Hunger, of course, is not the only reason people eat. Stress, boredom and pleasure all come into play. Most scientists who study obesity believe that people were designed to get fat because we are descended from hunter-gatherers whose evolution over millions of years was shaped by periods of scarcity and the threat of starvation. Those who could eat a lot and build up reserves of fat had an advantage when lean times came. So they survived and transmitted the ability to their descendants. But today, with rich food ever abundant, it is a liability.

Dr. Gordon Jensen, director of the Center for Human Nutrition at Vanderbilt University, said: "It is likely that we have a biologic drive to eat that served us well historically in terms of survival. Genetically, that made sense when you didn't know if your next meal would be tomorrow or five days from now, but when your next meal is whenever you walk by the refrigerator, that's a problem."

When a hormone called leptin was identified by researchers at Rockefeller University in 1994, many scientists thought it would be the solution to obesity. Mice lacking



Michael A. Schwartz

Giving in to hunger pangs is made easy along many stretches of American highways, and the roadside restaurants don't necessarily offer the healthiest of choices.

market of \$1 billion a year, are working on ghrelin blockers to treat obesity.

"Each one doesn't want the other to know they're doing it," Dr. Cummings said of the big companies.

So far, he said, it has been easier to find ghrelin mimics than ghrelin blockers. That is unusual, he said: most of the time, when working with natural molecules, the opposite is the case.

"I like to think it's good evolutionary design, making it harder to turn off appetite," Dr. Cummings said.

He said that some of the blockers may need to be injected but that drug companies were often reluctant to develop such products because people do not like shots. But most are so desperate to lose weight that, Dr. Cummings said, "I maintain a shot or a few shots a day would be something they'd be willing to do."

In August, Dr. Bloom's research team discovered that another gut hormone, called PYY, is made in response to food and then circulates to the brain, where it switches off the urge to eat. People given the hormone and then offered a buffet two hours later ate 33 percent fewer calories than when they did not have the hormone, and the effects lasted about 12 hours.

Since then, Dr. Bloom's group has tested PYY in obese patients to see if it could help them eat less and lose weight, but Dr. Bloom said he could not reveal the results because they had not been published.

As to whether PYY will be marketed, Dr. Bloom said: "We're in the middle of complex, tricky negotiations. The patent position is unclear."

But, he added, "I'm a physician. I treat people dying of obesity. I'd sure like to get an effective agent out there. I think this is an effective agent."

Other molecules are also being studied.

- \$33 Billion Per Year is Spent on Food Promotion.
- McDonalds alone spent \$1,500,000,000 on Advertising in 2002
- Children Watch 10,000 TV ads per year, much of it food related

# Density of Fast Food Restaurants

- Predominantly black/  
low income  
neighborhoods:

2.4 restaurants/sq. mile

- Predominantly white  
neighborhoods:

1.5 restaurants/sq. mile

American Journal of Preventive Medicine,  
October 2004

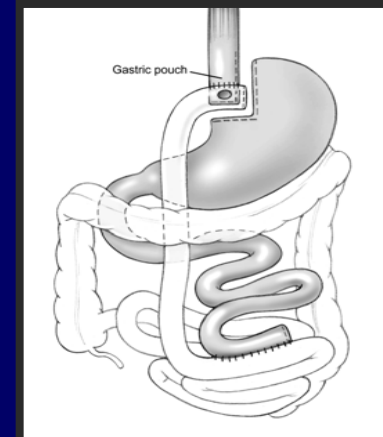


# GI Surgery for Severe Obesity

## *Risk and Complications:*

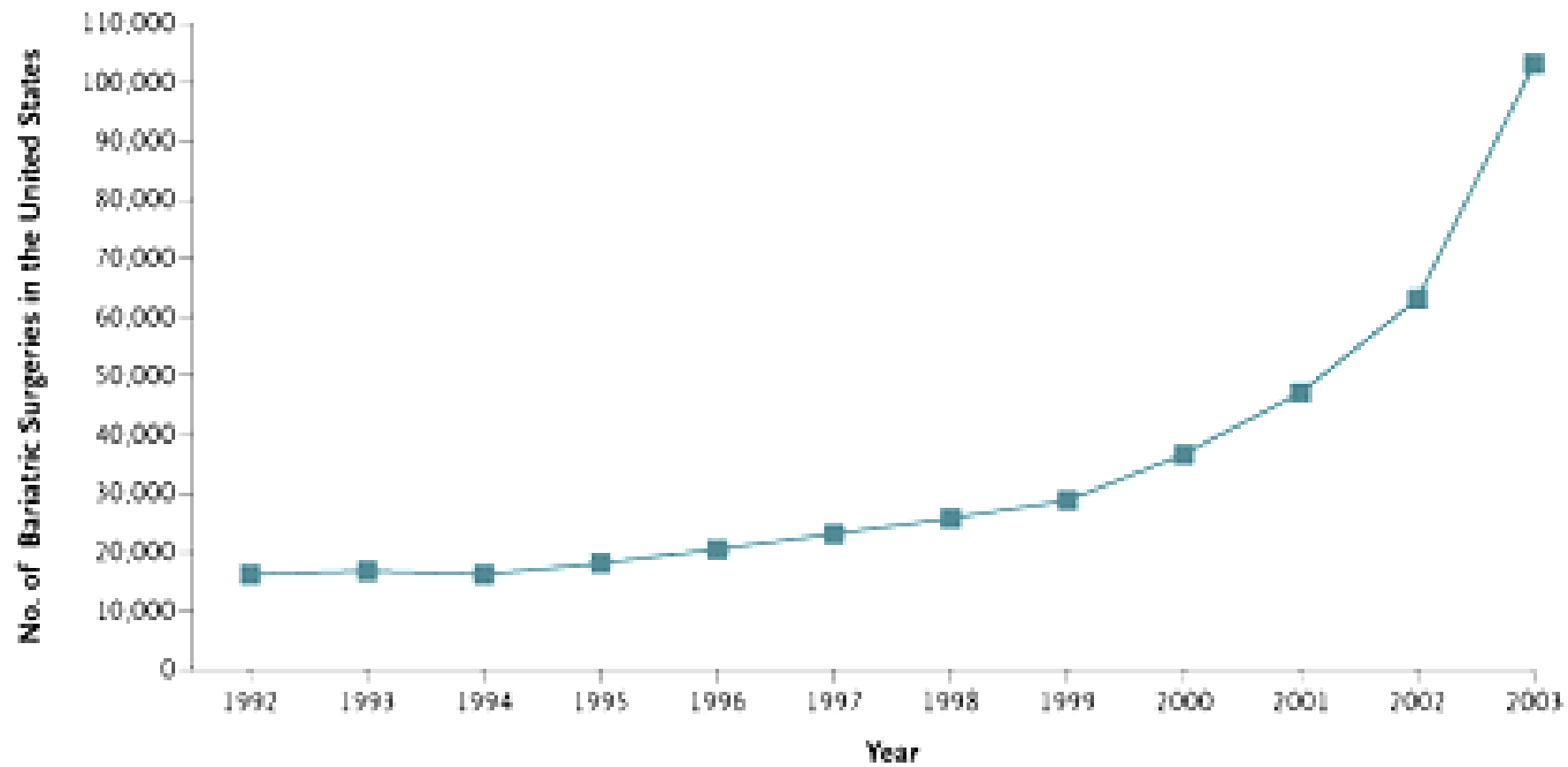
- 10-20% require follow-up surgery
- Abdominal hernia
- Break down of staple line
- Gallstones
- 30% develop nutritional deficiency

Cost: \$20,000 to \$50,000



Source: NIDDK

*Highest Increase Rate of all Pediatric Surgeries*



Surgery for Severe Obesity: US 1992 to 2003  
NEJM March 11, 2004

# Unintended Costs of Epidemic of Obesity

- Mean weight gain of Americans in 1990s:  
10 pounds
- Airline distance flown in 2000 in US:  
515 billion passenger-miles
- Weight transported 1 mile by 1 gallon of fuel:  
7.3 tons (passengers or cargo)
- Jet fuel to transport added weight in 2000:  
350 million gallons
- Cost of extra fuel: \$275 million
- CO<sub>2</sub> emissions from extra fuel:  
3.8 million tons

Data sources: NCHS; US Dept. of  
Transportation



Welcome to London. Once the other passengers have exited the plane, we will begin prying any remaining Americans out of their seats.



# Obesity

Percent of persons 15 years and over with BMI > 30

	Total	Male	Female
U.S.	30.9	27.7	34.0
Canada	14.9	16.0	13.9
Japan	3.2	2.9	3.4
Sweden	9.2	9.3	9.2
United Kingdom	22.0	21.0	23.5

Source: OECD Health Data 2003. Data for US and UK are based on examination surveys; other data are based on interview surveys.

# EDITORIAL

## The Ironic Politics of Obesity

**H**ere is a great irony of 21st-century global public health: While many hundreds of millions of people lack adequate food as a result of economic inequities, political corruption, or warfare, many hundreds of millions more are overweight to the point of increased risk for diet-related chronic diseases. Obesity is a worldwide phenomenon, affecting children as well as adults and forcing all but the poorest countries to divert scarce resources away from food security to take care of people with preventable heart disease and diabetes.

To reverse the obesity epidemic, we must address fundamental causes. Overweight comes from consuming more food energy than is expended in activity. The cause of this imbalance also is ironic: improved prosperity. People use extra income to eat more and be less active. Market economies encourage this. They turn people with expendable income into consumers of aggressively marketed foods that are high in energy but low in nutritional value, and of cars, television sets, and computers that promote sedentary behavior. Gaining weight is good for business. Food is particularly big business because everyone eats.

Moreover, food is so overproduced that many countries, especially the rich ones, have far more than they need—another irony. In the United States, to take an extreme example, most adults—of all ages, incomes, educational levels, and census categories—are overweight. The U.S. food supply provides 3800 kilocalories per person per day, nearly twice as much as required by many adults. Overabundant food forces companies to compete for sales through advertising, health claims, new products, larger portions, and campaigns directed toward children. Food marketing promotes weight gain. Indeed, it is difficult to think of any major industry that might benefit if people ate less food; certainly not the agriculture, food product, grocery, restaurant, diet, or drug industries. All flourish when people eat more, and all employ armies of lobbyists to discourage governments from doing anything to inhibit overeating.



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Food marketing promotes weight gain. Indeed, it is difficult to think of any major industry that might benefit if people ate less food.

Science  
Magazine

Marion  
Nestle PhD

Author:  
*Food  
Politics*

# DIABETES

It Strikes  
16 Million  
Americans

Are You  
at Risk?

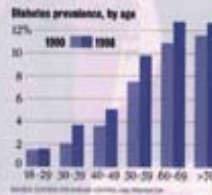
Computer drawing of a human insulin molecule

## SOCIETY

# An American Epidemic Diabetes

**The silent killer:** Scientific research shows a 'persistent explosion' of cases—especially among those in their prime  
BY JERRY ADLER AND CLAUDIA KALB

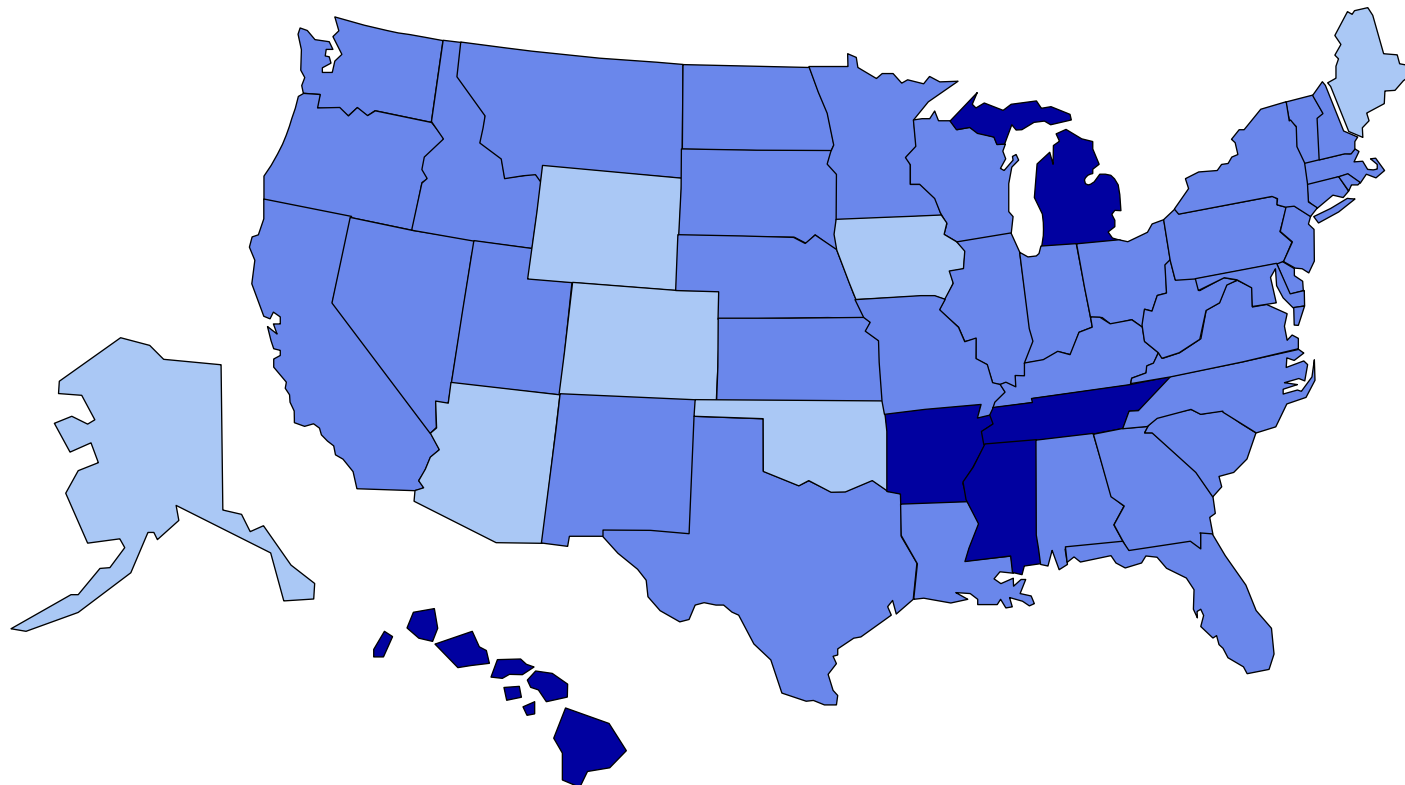
SOMETHING TERRIBLE WAS HAPPENING TO YOLANDA BENITEZ's eyes. They were being poisoned; the fragile capillaries of the retina attacked from within and were leaking blood. The first symptoms were red lines, appearing vertically across her field of vision; the lines multiplied and merged into a haze that shut out light entirely. "Her blood vessels inside her eye were popping," says her daughter, Jannette Roman, a Chicago college student. Benitez, who was in her late 40s when the problem began four years ago, was a cleaning woman, but she's had to stop working. After five surgeries, she has regained vision in one eye, but the other is completely useless. A few weeks ago, awakening one night in a hotel bedroom, she walked into a door, setting off a paroxysm of pain and nausea that hasn't let up yet. And what caused this catastrophe was nothing as exotic as pesticides or emerging viruses. What was poisoning Benitez was sugar.



**Heredity**  
Genes help determine whether you'll get diabetes. In many families, multiple generations are struck. But heredity is not destiny—especially if you eat well and exercise.

JERRY PLATZ: Benitez (left) and Roman. Benitez's mother and two brothers died from complications of the disease.

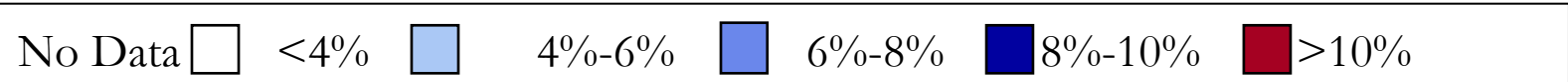
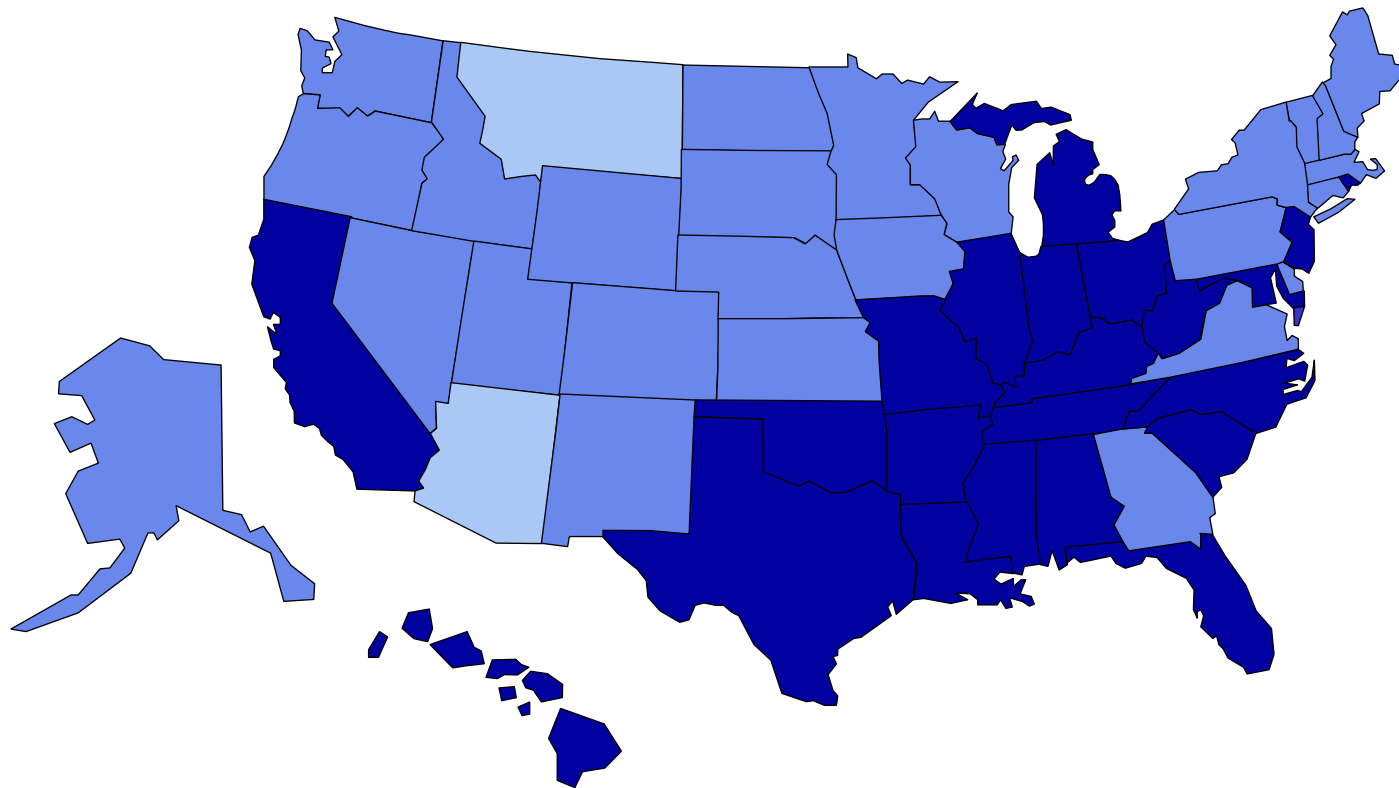
# Diabetes and Gestational Diabetes Trends Among Adults in the U.S., BRFSS 1993-94



No Data   $<4\%$    $4\%-6\%$    $6\%-8\%$    $8\%-10\%$    $>10\%$

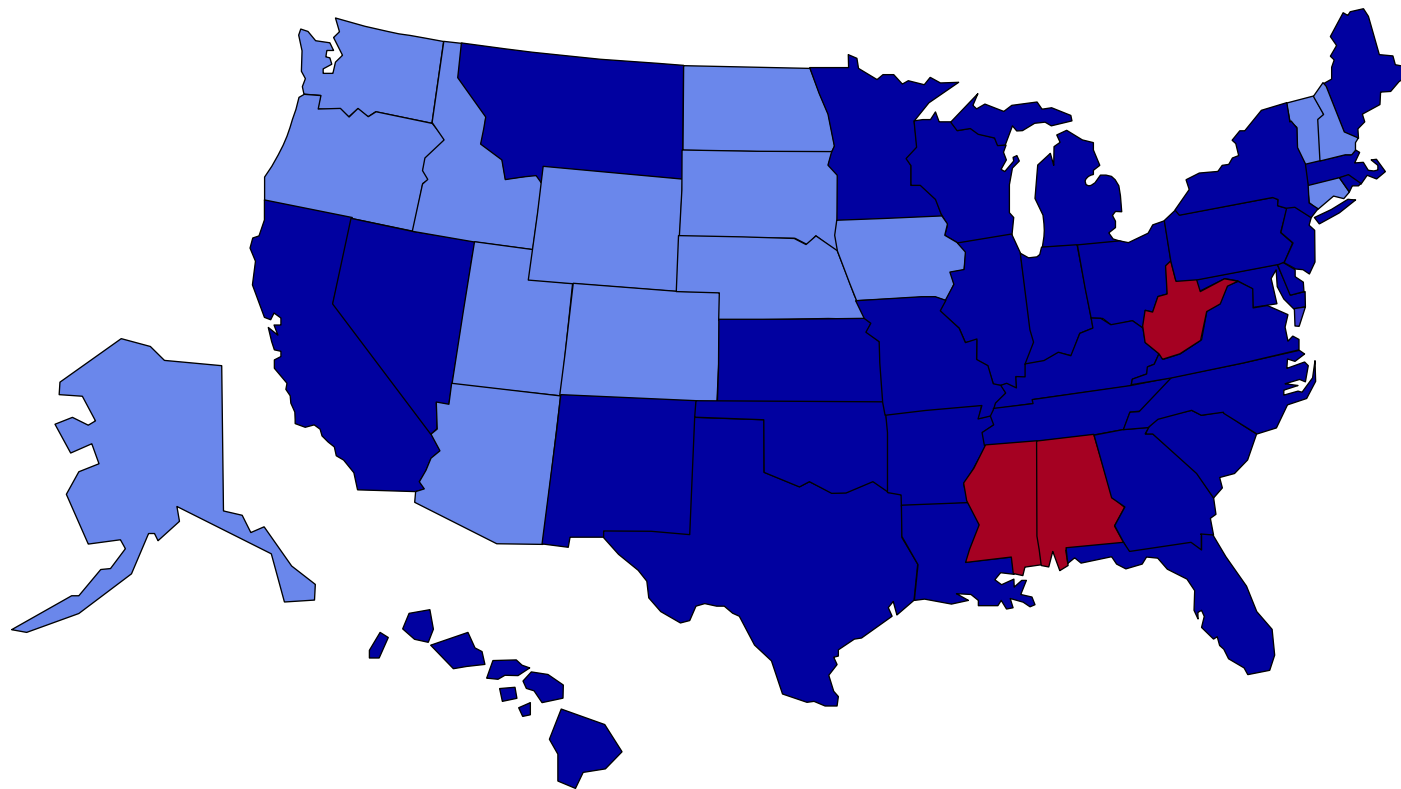
Mokdad AH, Ford ES, Bowman BA, et al. Prevalence of obesity, diabetes, and other obesity-related health risk factors, 2001. JAMA 2003 Jan 1;289(1).

# Diabetes and Gestational Diabetes Trends Among Adults in the U.S., BRFSS 1997-98



Mokdad AH, Ford ES, Bowman BA, et al. Prevalence of obesity, diabetes, and other obesity-related health risk factors, 2001. JAMA 2003 Jan 1;289(1).

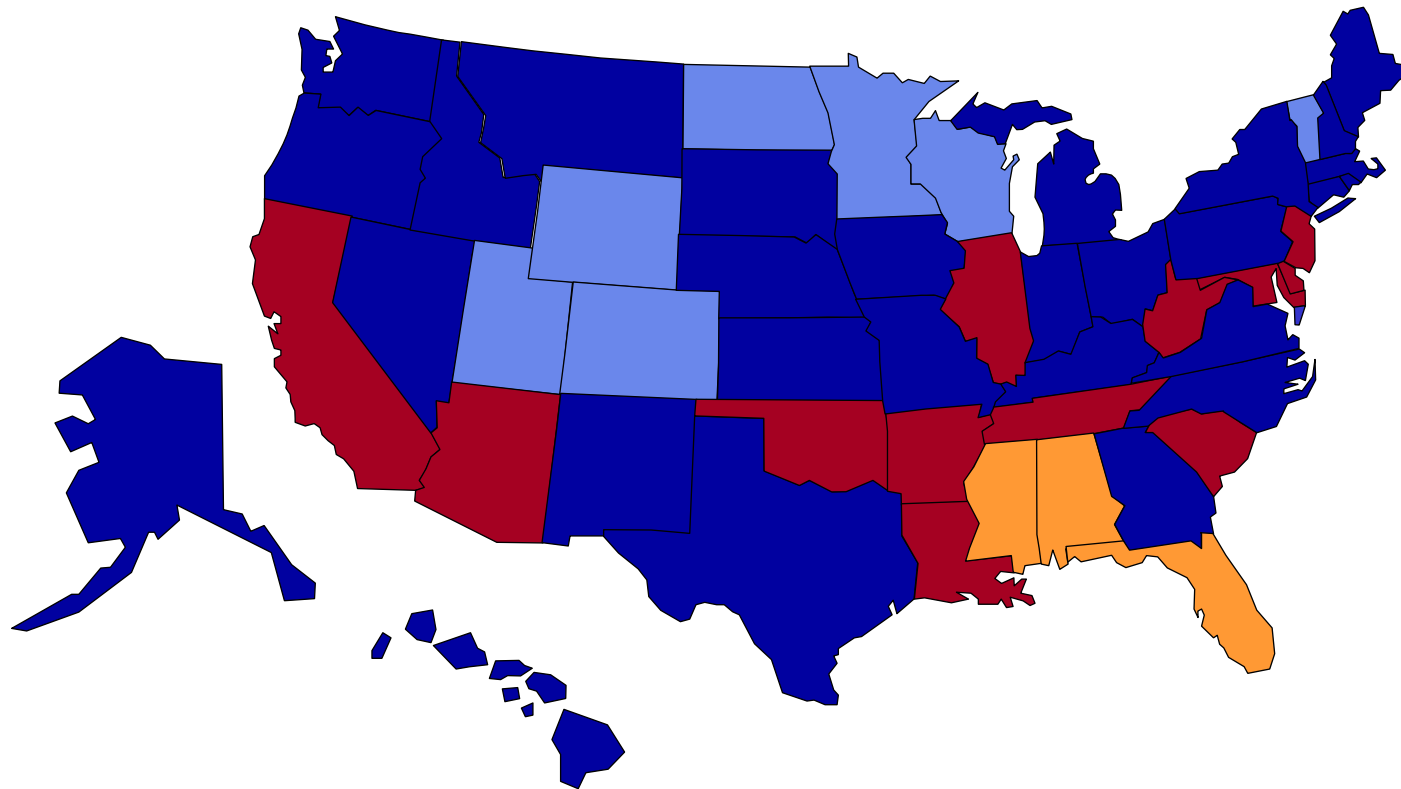
# Diabetes and Gestational Diabetes Trends Among Adults in the U.S., BRFSS 1999



No Data   $<4\%$    $4\%-6\%$    $6\%-8\%$    $8\%-10\%$    $>10\%$

Mokdad AH, Ford ES, Bowman BA, et al. Prevalence of obesity, diabetes, and other obesity-related health risk factors, 2001. JAMA 2003 Jan 1;289(1).

# Diabetes and Gestational Diabetes Trends Among Adults in the U.S., BRFSS 2001



No Data   $<4\%$    $4\%-6\%$    $6\%-8\%$    $8\%-10\%$    $>10\%$

Mokdad AH, Ford ES, Bowman BA, et al. Prevalence of obesity, diabetes, and other obesity-related health risk factors, 2001. JAMA 2003 Jan 1;289(1).

# Diabetes Projected Risks: For Babies Born in 2000

Girls: 38% lifetime risk

- If diabetic before age 40, Lifespan shortened by 14 years (Quality of life by 19 years)

Boys: 33% lifetime risk

If diabetic before age 40, Lifespan shortened by 12 years. (Quality of life by 22 years)

V Narayan et al: JAMA 8 Oct 2003

The Atlanta Journal-Constitution / Sunday, June 15, 2003

## CDC: Diabetes to afflict 1 in 3 born in 2000

Scientist says  
kids must  
eat healthier,  
exercise more

By JANET McCONAUGHEY  
Associated Press

**New Orleans** — One in three U.S. children born in 2000 will become diabetic unless many more people start eating less and exercising more, a scientist with the Centers for Disease Control and Prevention warned Saturday.

The odds are worse for African-American and Latino children. Nearly half of them are likely to develop the disease, said Dr. K.M. Venkat Narayan, a diabetes epidemiologist at the CDC.

"I think the fact that the diabetes epidemic has been raging has been well-known to us for several years. But looking at the risk in these terms was very shocking to us," Narayan said.

The 33 percent lifetime risk is about triple the American Diabetes Association's current estimate.

by 2050, to 29 million, an earlier CDC study by Narayan and others found.

"These estimates I am giving you now are probably quite conservative," Narayan said in an interview before the diabetes association's annual scientific meeting here.

Narayan said it would be difficult to say whether undiagnosed cases would rise at the same rate.

If they did, that could push the 2050 figure to 40 million or more.

Doctors had known for some time that Type 2 diabetes — what used to be called adult-onset diabetes because it typically showed up in middle-aged people — is on the rise, and that patients are getting younger.

Nobody else had crunched the numbers to look at current odds of getting the disease, Narayan said.

Overall, he said, 39 percent of the girls who now are healthy 2½- to 3-year-olds and 33 percent of the boys are likely to develop diabetes, he said.

For Latino children, the odds are closer to one in two: 53 percent of the girls and 45 percent of the boys. The numbers are about 49 percent and 40 percent for African-American girls

## Physical Activity Guidelines

- All adults should perform 30 or more minutes of moderate-intensity physical activity on most, and preferably all, days--either in a single session or *accumulated* in multiple bouts, each lasting at least 8-10 minutes. (CDC-ACSM, 1995)
- Youth should accumulate 60 min per day (UK Consensus Group, 2001)

# Impact of Change in Consumption

- Annual benefits of increased consumption of fruits and vegetables in California:
  - 5 A Day: \$316 million
  - 7 A Day: \$788 million
  - 7 A Day Cancer Prevention: \$836 million